

Monitoring Study Group Meeting Minutes

September 16, 2004

CDF Mendocino Unit Headquarters—Howard Forest Training Center

The following people attended the MSG meeting: Tharon O'Dell (BOF-chair), Tom Spittler (CGS), John Munn (CDF), Clay Brandow (CDF), Richard Gienger (SSRC/HWC), Duane Shintaku (CDF), Dr. Richard Harris (UCB), Matt House (GDRCO), Kevin Faucher (CTM), Peter Ribar (CTM), Joe Croteau (DFG), Brad Valentine (DFG), Anthony Lukacic (CDF), Margie Lopez Read (SWRCB), Sam Flanagan (NOAA Fisheries), Jared Gerstein (UCB), Henry Alden (GRI), Bob Whitney (CFL), Kathleen Morgan (GRWC), Dennis Hall (CDF), Dr. Marty Berbach (DFG), Dr. Matt O'Connor (O'Connor Environmental), Matthew Buffleben (NCRWQCB), and Pete Cafferata (CDF). **[Note: action items are shown in bold print]**. We began the meeting with general monitoring related announcements:

- John Munn announced that the MOU Monitoring Workgroup, made up of state agency representatives, including the Regional Water Quality Control Boards, SWRCB, CGS, and CDF, continues to work on mutually acceptable criteria for different types of water quality monitoring at the THP scale. To date, the Workgroup has been able to reach general agreement on: (1) shared agency goals, (2) water quality monitoring authorities, and (3) conditions and objectives for water quality monitoring. The Workgroup has not been able to reach consensus yet on guidelines that can be applied by the agencies to determine typical monitoring needs for individual THPs, but the group is hopeful that this can be achieved in the next 1-2 months.
- Pete Cafferata stated that the Watershed Management Council's 10th Biennial Meeting will be held from November 15-19th in San Diego. The conference is titled: "Watershed Management on the Edge—Scarcity, Quantity, and Distribution." Many concurrent sessions are planned and Dr. George Ice of NCASI is chairing one session on fire impacts. Tom Spittler and Dr. Sue Cannon (USGS) will present papers on post-fire erosion. More information on the conference is available at: <http://www.watershed.org/wmc/index.php>
- Richard Gienger informed the group that he participated in a public tour of the Canoe Creek Fire area in Humboldt Redwoods State Park held during the week of September 13th (see: <http://www.humboldtredwoods.org/canoe2003.htm>). Numerous monitoring studies are being conducted by the Department of Parks and Recreation, including how the wildfire affected old-growth trees in the basin. Erosion and sedimentation impacts after the first winter apparently were not severe due to relatively low storm intensity. Mr. Gienger reported that large wood entry has been accelerated into watercourses in the Canoe Creek drainage due to fire impacts.

Following these announcements, Dr. Richard Harris provided the MSG with a PowerPoint update on the protocols UCCE has developed for DFG to monitor fish habitat restoration projects. A final report has been submitted for peer review and copies of the protocols were distributed to MSG participants on CD ROM. This has been a collaborative effort, with contributions by Suzie Kocher, Jared Gerstein, Dr. Bill Weaver, John LeBlanc, Will Stockard, and Dr. Craig Olson. Richard introduced the subject by stating that DFG has funded hundreds of habitat restoration projects, but it is not known if the program has been successful as a whole. Few projects have been systematically monitored in the past.

Completed products include a monitoring strategy report, qualitative monitoring protocols, quantitative monitoring protocols, a watershed monitoring protocol, and a data management system. The overall strategy includes: (1) qualitative implementation monitoring for all projects by DFG, (2) qualitative effectiveness monitoring for 10% of the projects by DFG, (3) quantitative effectiveness monitoring for project categories by contractors, and (4) watershed monitoring for selected “intensively monitored watersheds” by collaborators. The strategy also includes establishing a Scientific Advisory Panel (SAP) to determine critical questions, review results of monitoring studies, etc. Permanent DFG staff estimated to cost \$500,000 per year will be needed to implement the strategy.

A series of protocols have been developed for quantitative and qualitative monitoring. Qualitative monitoring includes pre-treatment, implementation (as-built), and effectiveness (>1 year) checklists for all types of projects, photo-point monitoring protocols, and project location protocols. Quantitative protocols have been developed for riparian restoration, fish passage, instream habitat, instream substrate, bank stabilization, and upland erosion control. Watershed monitoring focuses on upland erosion control, including road upgrading and decommissioning. There are three phases to data collection: post-implementation adjustment, intermediate-term effectiveness, and long-term effectiveness. The first phase can include water quality grab samples, channel dimensions, and void monitoring. The second phase may utilize sediment traps, settling basins, and hydrologic connectivity mapping, etc. Long-term effectiveness can be determined by road maintenance monitoring and monitoring after stressing storm events in treated and control sites. Selection of watershed monitoring basins is to be based on the degree of restoration, availability of cooperative landowners, availability of treatment and control basins, and concurrent biological monitoring.

Data management will be accomplished by DFG’s Sacramento office and monitoring data will be linked to the California Habitat Restoration Project Database (CHRPD). Qualitative monitoring by DFG is currently underway. **Protocols are being reviewed by DFG, with final products available by February 2005. Richard stated that comments on the strategy and protocols are welcome.** With a second brief PowerPoint presentation, Richard quickly mentioned appropriate time scales for the different types of monitoring. Validation monitoring (i.e., determining if there are positive effects on fish populations) is desirable for watershed-scale monitoring, but is less appropriate at the site and reach scale. Considerable discussion on the various aspects of the project followed.

Next, Dr. Matt O’Connor provided the MSG with two PowerPoint presentations that were given earlier this year at the Redwood Region Forest Science Symposium in Rohnert Park. (see: http://www.cnr.berkeley.edu/forestry/redwood_paper39-oconnor.html). The first presentation was on a Class III erosion study conducted on PALCO timberlands in water years 2002 and 2003. First order streams (i.e., Class III watercourses) in the Van Duzen River and lower Eel River watersheds in Humboldt County were surveyed and small sediment retention basins were installed to measure sediment yield. The erosion processes of interest were surface erosion and channel erosion; potential sites with direct road runoff or active landslides were avoided. The project was completed jointly by Matt and Dr. Hobie Perry, formerly of HSU. Project assistance was provided by PALCO, PWA, and HSU. Study sites were randomly located, with a goal of 20 sites in each of three geologic types (coastal belt Franciscan, Wildcat Formation, and Yager Formation). Due to difficulties in installing sediment basins in very small drainages, data from 27 sites was ultimately analyzed. The mean drainage size was 6.4 acres. Control sites were second-

growth areas that had not experienced logging operations for at least 15 years. Treatment sites were either Habitat Conservation Plan (HCP) clearcuts with 30-foot buffers and 1 to 2 post-logging years, or sites clearcut prior to implementation of the HCP with 5 to 7 post-logging years.

Channel surveys were used to determine the origin of the sediment collected in the basins. Many variables were recorded for possible correlation to sediment yields, including measures of bank erosion, skid trail length, large wood loading, drainage area, etc. None of the measured variables were found to be well correlated with sediment yields. With the exception of 1 or 2 sites, there was no direct field evidence for where the sediment originated. Data for water years 2002 and 2003 were analyzed separately and some differences were apparent, likely due to the much stronger storms that occurred in the winter of 2002/2003. The grand mean for sediment yield for all the sites was 4 t/mi²/yr in 2002 and 25 t/mi²/yr in 2003. Back calculated soil creep rates were in the range of about 1 to 2 mm/yr. Two sites were removed from the data set when it became apparent that proximate slope failure contributed to sediment deposited in basins. The HCP sites tended to have lower sediment yield. This trend may be influenced by the fact that the HCP sites had experienced only 1 to 2 post-harvest winters, while the pre-HCP sites experienced severe winters over a longer post-harvest period. Also, control sites tended to have higher sediment yields than the HCP treatment sites, suggesting that legacy effects of past management are important.

Dr. O'Connor offered the following conclusions: (1) HCP management sites (with 30 foot buffers) tended to have lower sediment yields, (2) legacy management practices may contribute substantially to local sediment yields, and (3) Class III watercourse channels produce sediment at rates consistent with typical hillslope creep rates and with yield studies at Caspar Creek. Additionally, he stated that it is very difficult to collect data in these types of sites and that no control sites comprised of pristine forest were utilized for the study. **The paper for the Redwood Region Forest Science Symposium has been submitted but the proceedings have yet to be published.**

The second PowerPoint presentation by Dr. O'Connor was on statistical analysis of McNeil samples relative to targets for instream fine sediment levels. Matt reported on the data analysis completed by Ms. Brenda Rosser, O'Connor Environmental, Inc., in New Zealand as part of her Masters thesis work on the Waipaoa River, as well as data they have collected in the North Coast region of California in the Green Valley, Soda, Sulfur, and Carneros Creek watersheds. Ms. Rosser was the senior author of this paper and gave the presentation at the Redwood Region Science Symposium (see: http://www.cnr.berkeley.edu/forestry/redwood_paper45-rosser.html). Matt stated that there are many targets being used for percent fine sediment levels in spawning gravels. As an example, the PALCO HCP targets are: <0.85 mm -- 11 to 16% and <6.35 mm -- 20 to 25%. To further knowledge regarding fine sediment variability, bulk gravel data was collected with a 35 cm diameter McNeil sampler, with samples taken 15 to 20 cm down into the channel bed. These data were used to compute confidence intervals for various grain size distributions using methods recommended in Bunte and Abt (2001) [RMRS-GTR-74, http://www.fs.fed.us/rm/pubs/rmrs_gtr74.html]. Results show high variability with McNeil bulk sediment samples. This suggests that a study using McNeil samplers should be well thought out, with survey sampling completed first to determine the sample size needed to obtain a particular confidence interval. High precision sampling requires either very large samples, or a large number of samples. However, modest samples sizes (~10)

in a sample reach appear likely to provide relatively narrow confidence intervals for sediment percentiles of interest. **As with the Class III paper described above for the Redwood Region Forest Science Symposium, this paper will be in the symposium proceedings.**

Following lunch, Clay Bradow of CDF provided a brief update on CDF's Modified Completion Report (MCR) monitoring project. **Clay stated that he is compiling data from the project and anticipates having a final report by the end of the year.** Data collection was suspended on July 1, 2004 due to CDF Forest Practice Inspector staff shortages and budget uncertainties. Most of the data from the random sample of 12.5% of completed THPs has been received and there currently is data available from over 260 THPs evaluated from 2000 to 2004. The data set is nearly complete from the North Coast and Southern Sierra regions, but there are some deficiencies from the Northern Sierra region. Clay presented the MCR data to the Board of Forestry and Fire Protection at their June Meeting in Sacramento. The PowerPoint presentation used at that meeting is available online at: <http://www.bof.fire.ca.gov/pdfs/MCREarlyPrelimAnalysis2004-06-01.pdf>. Results in the final report will be similar but more detailed. The basic findings presented at the June BOF meeting were that: (1) WLPZ total canopy is high—averaging 83% in the Coast Forest Practice District and 70% in the inland districts for both Class I and II watercourses, (2) 16% of the road segments had at least one departure from the Forest Practice Rules (FPRs), mostly related to drainage, and (3) watercourse crossings had, on average, about 0.5 FPR departures or marginally-acceptable Rule ratings per crossing, but poor ratings tended to be clustered (i.e., most crossings had no problems and a few had one, two, or more problems).

Pete Cafferata then led a discussion on possible approaches for redesigning hillslope monitoring data collection based on what has been learned from the MCR and Hillslope Monitoring Programs. A one-page handout with 13 bullet points developed by CDF was provided as a “strawman” approach for opening dialogue on a new “Phase III” hillslope monitoring effort. Basic concepts included in these bullets included: (1) modifying the existing CDF MCR monitoring approach to make it a multi-agency approach by including the other Review Team agencies in the process; (2) emphasizing quantitative parameters; (3) focusing on key parameters identified in past monitoring work, including roads and watercourse crossings, with selected monitoring parameters open to discussion with the other agencies; (4) sampling a random draw of 10% of completed THPs that would be evaluated with CDF inspectors, with a second audit random draw, or stratified random selection, of 1% of these plans monitored by a multi-agency team; (5) using a stratified random draw of the multi-agency field team's plans to allow the evaluation of a high percentage of THPs in higher risk watersheds, THPs in 303(d) listed watersheds, plans harvested under the Threatened and Impaired Watersheds Rule Package, etc.; (6) designing the new monitoring effort to complement the MOU monitoring effort still being developed, which may emphasize landowner self-monitoring; and (7) estimating sediment delivery and direct impacts to water quality with cooperative instream monitoring projects in place and under development throughout the state, as well as intensive landowner monitoring efforts. The purpose of this monitoring work would be to determine Forest Practice Rule (FPR) effectiveness to protect water quality pursuant to CEQA and the Forest Practice Act. It would not be focused on the Regional Water Quality Control Board's Waste Discharge Requirement or Waiver processes, which may require very site specific information relating to specific mitigations found in individual Erosion Control Plans (ECPs).

There was considerable discussion for each bullet point of this strawman approach. Some of the comments included:

- The need for public involvement in the process;
- The need for repeatability in the process, requiring adequate QA/QC and training;
- The need by CGS to sample THPs where they made recommendations rather than utilizing a straight random or stratified random draw;
- Evaluating the FPRs and specific mitigations are separate goals that do not overlap well;
- The severe limitation of staffing by other agencies will limit participation;
- It may be beneficial to stratify based on the areas that have experienced the strongest stressing storm events;
- The Erosion Control Plan being required for the Waiver process by the Regional Water Boards should be monitored; and
- It is not sufficient to just consider CEQA and the FPA—we must consider the Basin Plan since it is part of the FPRs.

Mr. O'Dell stated that: (1) the several monitoring processes currently being discussed will likely test the patience of landowners, particularly as redundancy creeps into the approaches adopted by the various agencies involved, (2) whatever is designed must not alienate landowners to the point of resisting monitoring efforts developed by state agencies, and (3) broadly accepted protocols that allow everyone's data to be credible are needed. **Pete asked the participants at this MSG meeting to consider the draft strawman proposal in more depth and email him detailed comments to facilitate further refinement of an acceptable process (pete.cafferata@fire.ca.gov).** Further discussion on this topic will occur at the next MSG meeting.

The last main agenda item was an update on the MSG's three cooperative instream effectiveness monitoring projects. First regarding the Wages Creek project with Campbell Timberland Management (CTM), Peter Ribar reported that CTM has recently hired hydrologist Kevin Faucher. Mr. Faucher formerly worked for Graham Matthews and Associates (GMA) and did much of the field work on the Wages Creek project last winter. Kevin and others at CTM will now collect field data and maintain field equipment but GMA will continue to complete data analysis and develop reports for the project. **The goal this year is to install two more stations further downstream from the five stations established last fall, but exact locations for the stations have not determined.** CDF has purchased the equipment needed for the new stations and delivery to Fort Bragg has begun. The work completed last winter revealed that it is very difficult to accurately measure flow, suspended sediment, and turbidity in the steep gradient, very small headwater basins found in this watershed. Bedload sediment movement was high but turbidities were very low. **The revised study plan with the locations of the new stations is anticipated to be available in a few weeks. A Memorandum of Understanding (MOU) with CTM has been developed and will be executed in the near future.** A PowerPoint presentation on the project presented by Graham Matthews at the March 2004 MSG meeting is available at: http://www.bof.fire.ca.gov/pdfs/SFWages_Progress-Mar-2004.pdf.

Pete Cafferata provided updates on the other two cooperative instream watershed projects. **Ed Murphy of SPI informed Pete that Dr. Cajun James has nearly completed a study plan for the Judd Creek cooperative project in Tehama County;**

this study plan will be discussed in detail at the next MSG meeting. Cajun is currently out on maternity leave. The Judd Creek “Engelbrechtsen” THP is in the public review period and CDF will make a final decision after September 28th. The plan calls for 41 clearcut units covering 816 acres, or 13% of the Judd Creek watershed. New road construction as well as road abandonment and road improvement work is specified in the THP. Currently, two water quality monitoring stations exist in lower Judd Creek; three more stations will be installed to monitor the potential impacts associated with the plan. Parameters to be measured include: turbidity, discharge, dissolved oxygen, temperature, etc. **A Memorandum of Understanding (MOU) with SPI has been developed and will be executed in the near future.**

Regarding the Garcia River cooperative instream monitoring project, Jan Olave of the Mendocino County RCD informed Pete that Teri Jo Barber, working for the RCD, has nearly completed bulk gravel sampling for fine sediment composition, as well as gravel permeability and embeddedness sampling, at 4 stations established in 1998/1999 and used for continuous turbidity measurement last winter. McBain and Trush and GMA will complete the required laboratory analysis and report generation associated with this work in the fall and winter months. The five continuous recording turbidimeters used last winter have been sent back to the manufacturer (FTS) for recalibration and repair work. A CDF contract amendment will allow a second winter of continuous turbidity measurement and proposals for additional funding have been sent to NOAA Fisheries and DFG. **The mainstem Garcia River monitoring station is being abandoned due to the difficulties of collecting high quality data with very high discharges. A station will be established on either Inman or Signal Creek and used as a replacement. The RCD is working on an access agreement for the second winter of data collection with The Conservation Fund (TCF). MRC and the Maillard Ranch have granted access.**

Under new and unfinished business, Pete Cafferata announced that Sam Flanagan’s Master of Science thesis from HSU titled “Woody Debris Transport Through Low-Order Stream Channels of Northwest California—Implications for Road-Stream Crossing Failure” has been completed and is available on the MSG website at: <http://www.bof.fire.ca.gov/pdfs/FlanaganThesisFinal.pdf>. This thesis work was partially supported by CDF monitoring funds during the mid-1990s.

During the public comment period, Richard Gienger stated that he believes it would be beneficial for the MSG to have a winter field trip to observe field conditions during the more hydrologically active part of the year. It was suggested that possibly this could occur on Jackson Demonstration State Forest in February.

The next MSG meeting was scheduled for November 10th at 10:00 a.m. The exact location is still to be determined and will be emailed out to the MSG when it is available, along with the agenda for the meeting.